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Modeling inhibitory and excitatory synapse learning in the memristive neuron model

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Abstract

 In this paper we present the results of simulation of exitatory Hebbian and inhibitory "sombrero" learning of a hardware architecture based on organic memristive elements and operational amplifiers implementing an artificial neuron we recently proposed. This is a first step towards the deployment on robots of a bioplausible simulation, currently developed in the neuro-biologically inspired cognitive architecture (NeuCogAr) implementing basic emotional states or affects in a computational system, in the context of our "Robot dream" project. The long term goal is to re-implement dopamine, serotonin and noradrenaline pathways of NeuCogAr in a memristive hardware.

Keywords

Affects, Artificial neuron, Biologically inspired robotic system, Circuits, Cognitive architecture, Memristive elements

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